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The effect of a formal, structured approach to language development on preschool children is the subject of this project study. From August 1965 to August 1966, 157 programs administered to 1663 children explored mental ability, auditory and visual discrimination, language use, vocabulary, and motivation. Children attending day care centers, nursery schools, and Head Start classes were tested, and the following observations were noted: (1) childre n from poor homes have inferior ability to discriminate spoken word sounds; (2) when children are given interesting materials, their verbal output shows no differentiation; and (3) motivation is equal in advantaged and disadvantaged children. New tests are needed to measure vocabulary, auditory and visual discriminations. Experimental studies proved three-dimensional toys do not produce superior learning, and repetition of grammatical sentences is preferred to story-telling in developing verbal fluency. As a result of assessments and experiments, the project proposes a 30-week program to develop familiarity and facility with language in science, mathematics, social studies, literature, language usage, and logical processes on a preschool level. The program would occupy only 15 minuets of the school day and would not minimize the productive value of present day care center programs. (DO)

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THE PRESCHOOL LANGUAGE PROJECT

A Report of the First Year's Work

Prepared By

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INTRODUCTION

Few people today would dispute the fact that children who spend the first four or five years of their lives in impoverished homes and on slum streets begin their school careers with several strikes against them. Of course there are exceptions. We have all heard "rags to riches" success stories. We know there are many children from similar ramshackle houses in the same neighborhoods who do make the grade in school, and become professional people: doctors, lawyers, teachers. But they are the exceptions. The odds are much greater that the slum child will drop out before he finishes high school. Why shouldn't he put an end as soon as he possibly can to the failures and frustrations which school has stood for from practically the first grade?

There is little doubt that children from poor homes suffer many more handicaps than the lack of material things usually associated with low income. In almost every measure of mental ability, visual and auditory discrimination, vocabulary, and other skills which are closely tied to school-type tasks, these children, on the average, score considerably below those from middle-class homes. Why this is so is an important question, one to which many psychologists and sociologists, biologists and nutritionists, are hard at work trying to find an answer. Of far more practical interest is the question of what, if anything, can be done about it.

For several years now, and in many different cities across the country, a wide variety of action programs have taken ghetto children a year before they would normally enter school, and have provided them with enriching experiences. This "mother's knee" approach attempts to supply some of the attention and mothering the middle class child gets as a matter of course. While there is no doubt that this type of "compensatory" preschool makes an important contribution, it may not be the most efficient way of producing improvement in those specific areas where the need is greatest.

The Preschool Language Project was designed to explore the effect of a more formal, structured approach to one of the most important of these areas of deficiency, that of

language development. This structured program will take approximately 15 minutes of the child's day, and be in addition to all the normal activities of the center. In these prepared lessons the child will be given the opportunity to use language to express himself, tell stories, respond to directions and questions, and solve simple problems. It is a five-year project, of which the first year has just been completed.

The work of our first year will be described in three sections: I. Assessment and Evaluation; II. Experimental Studies; and III. Instructional Programs.

To begin with, we were interested in finding out how the children in the Day Care Centers performed, compared to children in Private Nursery Schools, on various tests of language-related abilities. For this reason, a number of comparative studies were carried out. In order to measure these abilities, we tried to use standard tests. However, we soon found that very few existing instruments were appropriate for our purposes. This led to the development of the new instruments which are described in the second part of the first section.

Before we could begin to build the instructional programs and materials for use in the experiment, we had to make a number of decisions about the type of material to use and the best method of presenting the instruction. To answer these questions, a number of experimental studies were designed. So far, five of these have been completed and will be described in the second section.

Finally, the third section discusses a series of instructional programs which have been developed and are now being reproduced for preliminary tryout in a few Day Care Centers during the coming school year.

Part I. ASSESSMENT AND EVALUATION.

A. Comparative Studies.

In the introduction we reported that children from impoverished environments have been found to be, on the average, below their middle-class counterparts in almost every measure of a school-related skill. Our first line of activity was to check these findings for ourselves.

1. To compare differences in mental ability, we used two standardized tests: the Peabody Picture Vocabulary Test, and the Goodenough-Harris Draw-A-Man Test. The first test, as the title indicates, measures the child's command of language, but has also been found to give scores very close to those of the longer and more difficult-to-administer Stanford Binet Intelligence Scale. The child is shown cards on each of which there are four pictures, and asked to point to the one which goes with the word or action described by the examiner.

The second test, the Goodenough-Harris, is a measure of mental ability which is not heavily influenced by verbal facility. For this reason it has often been usedwhere a language handicap, related to environmental circumstances, may give a misleading picture of native mental capacity.

These two tests were given to three different groups of children. There were 124 Day Care children, 90 Private Nursery School children, and 127 Head Start children. One of the interesting findings of this study was that the average scores made by the middle-class children on both the verbal and the non-verbal tests were almost identical. The Day Care children scored six points higher on the Goodenough, which requires motor control, perceptual ability, and understanding of relationships, than they did on the Peabody Picture Vocabulary test. The difference was even greater for the Head Start children who, on the average, were 11 points higher on the Goodenough test compared to their scores on the Peabody. These results support the view that intelligence tests which rely heavily on the ability to handle language are unfair to children with limited vocabularies.

In both of these tests, the differences in ability among the three groups was marked. While there was quite a bit of overlapping, it was clear that, on these measures, the children who were just beginning in Head Start programs were considerably below both the Day Care child and the child in the Private Nursery. The child from the Day Care Center was approximately as superior to the Head Start child as he was inferior to the child from the Private Nursery. In I.Q. terms, the Day Care child was about average, the Head Start child about 20 points below average, and the Nursery School child 20 points above average.

2. A skill which is closely related to a child's ability to do well in the early grades, especially in beginning reading, is that of auditory discrimination. The test most often used to measure this ability is the Wepman. Two separate studies were carried out using this test. In the first study, three age groups of children (four, five, and six year olds) from Private Nursery schools were compared with Day Care children. No attempt was made to take into account differences in race. Thus the majority of the children in the latter group were Negro, while almost all the children in the first group were Caucasian.

The findings clearly supported those of other investigators, showing considerable differences in favor of the middle-class group. In addition, we found that whereas with the middle-class group there was an important amount of improvement in the ability to make auditory discriminations between the fourth and the sixth year of age, no such growth was shown by the child from the Day Care Center. This seems to argue for the "cumulative deficit", or the "progressive achievement decrement" which has sometimes been used to describe the fact that children's handicaps increase as they get further along in school.

The second study of auditory discrimination also used the Wepman. In addition, since the words to be discriminated in this test are ones which middle-class children are more apt to have in their vocabulary, and thus might provide these children with an advantage quite unrelated to their ability to hear differences in spoken words, another test was devised in which all the pairs to be discriminated were made up of nonsense sounds. The second study also attempted to find out if ability to hear differences in spoken word-like sounds was related to race apart from economic status. For this study a total of 232 children, consisting of two groups of Caucasian and two groups of Negro children, were used to sample for race across economic status. In addition, the results were analyzed in terms of the same three age groups as in the earlier study.

The results again showed that on an overall basis children from poor homes have inferior ability to discriminate spoken word sounds, as measured by the Wepman. However, with the Caucasian children from both groups there was noticeable improvement over age; with the Negro children this was not true. The Negro children from advantaged homes were superior to the white children at the four

year old level, but obtained approximately the same average score at the six year old level, whereas the Caucasian child gained five to seven points regardless of socio-economic status. By the age of six, the average Caucasian child from a poor home had caught up to the other groups, but the disadvantaged Negro child had not.

When nonsense words were used as a basis for discriminating like and different sounds, all the Caucasian children and the Negro children from advantaged homes scored approximately at the same level; however, Negro children from poor homes were considerably below the other three groups.

These results may hve been influenced by the fact that the tests were administered by a Caucasian examiner, and the word-pairs tape-recorded by a speaker using standard English speech. However, in another investigation the same material was recorded by both a Negro and a Caucasian speaker, and it was found that Negro children did better with the speaker using standard English. Another possible reason for doubting the above findings is the form of the auditory-discrimination test itself.

As we have proceeded in our work with this age group, we have found that many children do not understand the concepts of affirmation and negation; when asked if two things are the same or not the same, they become confused. In spite of the fact that a special sequence had been prepared to help the children understand the task, it is quite likely that many of the responses we were getting were pure chance. A child may have been answering "yes" or "no" at random, without any attempt to make the discriminations called for. These considerations led to the construction of a different type of auditory discrimination test, which will be described in the second part of this section.

3. Another perceptual ability which it seems reasonable to consider important in beginning reading is that of visual discrimination. Again the only standardized test available to measure this ability was inadequate with these children. On the Frostig Developmental Test of Visual Perception, all the children scored in the lowest 25%, as compared to the population on which the norms were set. We felt that this did not give a true picture of visual perception ability, since all the subtests were highly loaded with eye-motor coordination tasks. A new test which gets at perceptual ability apart from motor control has been constructed.

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4. A number of investigators have indicated that the language used by different socio-economic groups has important implications for school learning. It is claimed that children from poor homes are not as verbal as children from middle-class homes, and that the language they do use is "restricted" in terms of descriptiveness and flexibility. To test this point of view, a verbal output study was carried out with the Nursery School and Day Care populations.

In the Verbal Output Inventory, children are shown five black and white pictures representing different types of scenes. There are two country scenes, a middle-class urban scene, an urban slumstreet scene, and a picture of an urban zoo. In this study, children were asked to tell what they saw in the picture, and then to tell a story about it. All the words produced by the child, except for conjunctions and hesitations, were recorded and analyzed both in terms of total output and in the variety of words for each picture. The relationship between these two measures was so close that only the total output scores were used for analyses of population differences.

It was found that disadvantaged Caucasian children and advantaged Negro children produced a great many more words to describe these pictures than did advantaged Caucasian and disadvantaged Negro children. In this study a group of Mexican-American children from poor homes was tested, and found to be considerably below all the other groups. However, these children were slightly younger and made lower scores on the mental ability tests.

While many writers in this field have expressed the opinion that there is an important difference in the proportionate use of different parts of speech, that is, that children from poor homes would be less likely to use adjectives, adverbs, or -ing verb forms, we did not find this to be true. In fact, the advantaged Caucasian and disadvantaged Negro children were similar in their part-of-speech usage patterns as well as in their total verbal output. They used a large percentage of nouns (about 60% of total output) and comparatively few pronouns, adverbs, adjectives, and prepositions. The proportion of -ing verb forms compared to total verb output was much higher than with the other two groups.

With reference to the content of the pictures, we found no evidence of group differences. For some unknown reason, all children had considerably less to say about

the zoo picture than any of the other scenes.

The results of the verbal output study seem to indicate that when children from poor homes are given materials which they find interesting and meaningful they can talk about them quite as fluently and expressively as children from advantaged homes. Perhaps their diction is not as familiar to our ears, and their sentence constructions will win no prizes in grammar, but they are certainly willing and able to communicate through the use of language.

5. In trying to determine the nature and extent of the vocabulary children need to be familiar with when they enter kindergarten, we decided to use two quite different approaches. First of all, we made a thorough and exhaustive study of a wide variety of word-lists, work books, readiness tests, and mental ability tests. All these words were listed and tabulated as to frequency of occurrence. From these the 125 most common were selected and made the basis of a new vocabulary test.

The second approach was to make records of the language used by a variety of kindergarten teachers. Teachers in schools drawing upon different types of populations were sampled, and the Flander's system for analyzing teacher speech was used. According to this analysis, we found some slight indication that teachers working with children in poor neighborhoods are apt to be more directive in their teaching. They make more statements of fact and ask more specific questions compared to teachers with advantaged children.

As a result of this survey, we have been able to identify a number of important speech patterns children will need to understand when they enter kindergarten, and have incorporated instruction in these patterns in our language units. We have also been able to prepare a list of words with which all children should be familiar before entering kindergarten.

6. Our sixth assessment study was an attempt to verify some of the statements we often hear about differences in motivation which are supposed to be characteristic of population groups. For instance, we are often told that children from poor homes work harder for concrete rewards, and that they are not as apt to work simply for the praise and approval of the teacher. In designing this study, five types of conditions were used. These

were: candy for the correct response, nothing for a wrong one; candy for the correct response and a reprimand for the wrong one; praise for the correct response and nothing for a wrong response; praise for the correct response and a reprimand for the wrong one; and finally, no praise or punishment of any kind.

The materials consisted of three books of approximately 30 pages with two pictures on each page. All the pictures had been previously shown to a similar group of children, and only those which could be correctly identified by 95% of the children were used in the study. The task was for the child to point to the picture described by the experimenter. Since all the pictures were familiar, all children were expected to make a correct response. To control the number of incorrect responses, which were necessary to determine the effect of the reprimand, 60 of the 184 individual pictures were given nonsense names. Regardless of which picture the child selected, he was told he was correct or incorrect according to an established schedule. This procedure made certain that all children would receive the same number of unrewarded or reprimanded responses.

On the whole, children from poor homes were apt to stay longer with the task than children from advantaged homes. When these groups are further subdivided on the basis of race, it was found that the Caucasian advantaged children and the Negro disadvantaged children tended to remain slightly longer, regardless of the type of reward being used. The Caucasian children from poor homes seemed to be highly motivated by candy reward, with very poor performance in the other four conditions. This was the opposite of what we found with the Negro children from poor homes where candy had little appeal, but all the other conditions, including neither reward nor reprimand, proved highly motivating. There was so much variation within the groups that differences in the other conditions could not be considered reliable. However it is safe to say that the experiment demonstrates that children from poor homes are motivated in just about the same way as children from middle-class homes, and that they will stay and work when the tasks are interesting and when they are given a good chance for success.

B. Development of New Evaluation Instruments.

Five new instruments have been constructed and are now in the process of being tried out. All but the last

of these were developed because no adequate instruments were available.

1. The vocabulary test which we have developed is based on the 125 words most children are expected to know when they enter kindergarten. It differs from the Peabody Picture Vocabulary in two ways. First, it is intended for the younger age group alone, and provides a more adequate sampling of words at this level. Secondly, the child is required to produce the word which is appropriate for the picture, rather than to point to the picture which goes with the word spoken by the experimenter.

The test was given to 80 children and proved quite reliable. The average score was approximately 78% for the test as a whole. When performance on the different parts of speech is examined, we find that the error score with adjectives taken alone is almost 50%.

2. The Children's Auditory Discrimination Inventory (CADI) was developed because of our dissatisfaction with the Wepman.

This test uses pairs of pictures, each of which is a simple black-and-white line drawing. One picture of each pair represents a recognizable object, the other a nonsense drawing. The real pictures were selected to represent words which had been previously established as familiar to most of this group of children.

The child is shown a series of 20 two-picture cards. The examiner points to each picture in turn and says the word for it. The real picture has a familiar name, the nonsense picture an unfamiliar one. For instance, a picture of a sock, and a funny line drawing called a "sot." In half of the items the word to be discriminated is the nonsense word, and in the other half it is the real word. The order of selection is randomly determined, as is the location of the real or nonsense picture on the right or left half of the page. However, in all cases the real word is spoken first so that the unfamiliar nonsense word can be more readily compared with the word to be discriminated.

This test was tried with 17 four-year-old Caucasian Child Care Center children. Of these, seven missed three or fewer items; five children missed more than ten items. It is interesting to note that with difficult discriminations children tend to select a familiar rather than a nonsense picture. Thus it is also quite possible that half

of the time that the child selected a correct picture he was not making an auditory discrimination but just choosing the familiar picture. The test is now being revised to counterbalance for this type of guessing behavior.

3. A second type of auditory test we have developed is called the Echoic Response Inventory for Children (ERIC). This presents the child with a series of 20 sentences, graduated in difficulty based on the length of the expression and the complexity of the sentence form used. Two comparable forms of this test have been written and tried out with 23 children. All children were given both forms, one recorded on tape by a native Californian Caucasian male speaker, the other by a male Negro with a Northern Negro dialect. The test seems to be very promising and will be checked out with a larger group of children.

4. As indicated earlier, the Frostig Developmental Test of Visual Perception did not seem to be suitable for our population. We also tried to use the Winterhaven test, but again found performance too closely tied to motor skills. For this reason we developed a new test to measure perception which reduced the motor elements of the task to a minimum.

The Visual Perception Inventory (VPI) consists of five sub-tests. The first of these is the only one in which eye-hand coordination is involved. Here the task is to draw a line along five increasingly narrow and winding paths. The four areas of visual perception are: Form Constancy, Figure-Ground, Closure, and Position-in-Space. There are a total of 36 items in the test, which takes approximately 10 minutes to administer. However, since four of the subtests require the child to make a selection response, a preliminary program to familiarize the child with this operation is provided. Children are taught to match one of three pictures with a model, using familiar objects such as a cat, ball, etc. Only after ten correct selections in a row have been made is the child given the Visual Perception Inventory. When this instrument has been adequately pretested it will be prepared for group presentation to four of five children.

This test has been given to 59 Head Start and 10 Day Care Center four-year-old children. Scores ranged from 2 to 28, with a normal distribution. The four visual perception subtests seemed to measure something quite different from either motor ability or intelligence.

5. A color test is now being prepared to evaluate children's ability to work with color on two levels; first in the perceptual sorting and matching of primary and secondary colors, and second in naming these colors. This test is planned as a pretest to determine at what point a child should enter the color program.

Part II. EXPERIMENTAL STUDIES.

A. Two-dimensional vs. Three-dimensional Materials.

Most teachers of young children feel it is very important to have children use a wide variety of sensory modalities. Touching, smelling, feeling, handling, are thought to make major contributions to the young child's understanding of the world in which he lives. While not belittling the value of such experiences, we wondered whether they were actually essential for developing some of the concepts we were interested in teaching. It is not impossible to prepare programs which use three-dimensional objects, but such materials create housekepping problems for the teacher. To warrant their use in the program they would have to demonstrate considerable superiority over two-dimensional pictures, which are much easier to program and to take care of in the classroom.

The experiment designed to throw some light on this question used, for one treatment, a metal doll house, two bendable rubber figures, and a full-sized door knob with a lock and key mounted on a small door attached to a frame with a pair of hinges. The second group of children saw pictures which had been drawn of these very objects. The verbal commentary which accompanied both types of material was identical. The instructional program concerned a boy who was learning about the various parts of the house in which he lived. The program was presented in two segments, each of which was expected to take approximately 12 minutes.

Twenty-five boys and twenty-five girls from Day Care Centers took part in this experiment. The results demonstrated that all the children gained a great deal from the program. However, these gains were just about the same with both sets of materials; the three-dimensional objects did not produce superior learning. On the debit side, the latter program was more difficult to administer and took several minutes longer. The children were interested in

playing with the house and the other objects and did not readily settle down to learning the verbal concepts the program was designed to teach. While there may be great value in the Day Care Center having a doll house which children can explore and manipulate at will, it seems that when it comes to learning verbal labels for the concepts, it might be just as well not to have the distraction of the objects themselves.

B. The development of verbal fluency: Pattern-practice vs story context.

The purpose of this experiment was to determine which of these two methods was more effective in getting children to form complete and grammatical sentences. Two programs were constructed, each requiring five days, with an additional two days for pre- and posttests. The daily lessons contained up to 90 individual items and lasted approximately 12 minutes. Three types of responses were called for: echoing the sentence of the examiner, pointing to the object described, and producing the appropriate sentence for a selected picture.

In the pattern-practice treatment the sentences were carefully sequenced and presented in order of grammatical difficulty. This led to a regular routine of responding with the same sentence form but altering only one element (subject, object, or verb) which the children found easy to perform and which, for the short period of this experiment, did not become too boring. The story treatment used many of the same sentences when they were appropriate for the story context. However, to maintain the story, the pattern of repetition had to be altered, a number of bridging sentences which required only a listening response were introduced, and the number of occasions for echoing the structured sentences was decreased so that the total time would be the same for both treatments.

The results showed that the structured repetition of the sentences in a pattern-practice fashion produced considerably more learning than the story form. This improvement carried over from the material with which they were trained to new and different types of pictures. Contrary to our expectation, the story form did not seem to keep the children any more involved than the more formal pattern-practice. Evidently the fact that the beginning sentences were within their ability level, and that they were gradually brought to where they could produce more and more complex sentences, was sufficiently rewarding to keep the children interested in this sentence production training.

C. Sentence Production Training: Echoing vs Modeling.

Another approach to the improvement of language production was one which compared an echoing with a modeling procedure. Both treatment groups were given the same four day program, each day consisting of approximately 16 different pairs of pictures. With one group, the experimenter presented the sentences which described the two parallel pictures. For instance, a picture of a pear was shown and the experimenter said: "This is a pear." Then the picture of an apple was shown and the experimenter said: "This is an apple." The children were asked to repeat the sentence after the experimenter. This procedure was followed for all the items in the program, using a variety of sentence structures. The test required the child to produce the sentences to some of the same pictures, as well as to some new pictures, without the experimenter's help.

In the second treatment the experimenter would show the pear picture and say: "This is a pear," and ask the child to repeat that sentence. Then the child would be shown the picture of the apple and asked: "Now you tell me about this picture." While this procedure gave the child only half as many models to echo, it did give him the experience of having to produce his own sentences.

Because of the small number of children to whom this training was given, no definite conclusions concerning the comparative merit of the two methods can be drawn. However, there were indications that the double-echoing procedure produced better results with children doing poorest on the pretest. Further experimental work should be done along these lines.

D. Sentence Production Training: The value of the Spoken Response.

Closely related to the previous study, this experiment attempted to find out whether children who are asked to speak out loud during a learning program will improve their ability to produce good sentences more readily than children who are given an opportunity to listen to the correct sentences. This study used the same pictorial materials which had been used in the experiment with pattern-practice vs story context. Since the pattern-practice had proven so much more effective, only this procedure was used. The treatments differed in that in one case the children heard the experimenter say each sentence twice, and in the other, the experimenter said the

sentence, and the child was asked to repeat it.

While the results of this study have not yet been completely analyzed, it seems that both methods are working equally well. The advantage of the group which is given the opportunity to practice producing the sentences, often incompletely or incorrectly, seems to be counterbalanced by the fact that the listening group is given the opportunity of hearing the correct form twice and not asked to produce sentences before hearing a great many correct ones.

D. Concept Learning: Random vs Ordered Sequence.

This study asked the question of how important it was that instructional materials be carefully presented in a logical order. The earliest programmers were very concerned that instructional programs should develop the concepts and content of a subject in a very orderly manner. More recently the necessity of such a procedure has been questioned, at least with older learners. But could young pre-school children be expected to learn basic concepts if the material was thrown at them in a rather helter-skelter manner?

Five concepts were selected for teaching in this experiment. They were: clothing, transportation, animals, furniture, and parts of the body. Five examples of each concept were provided. For each example the child was required to respond to four questions: What's this?; What do you do with it?; Where do you find it?; and a nonsense situation demonstrating the instance of the concept in an inappropriate setting, as, for instance: Can you brush your teeth with a couch?

The instructional program took five days, with one concept presented per day. The treatments differed in that the ordered presentation followed the same sequence of questions for each example, whereas the random treatment presented all the same items but in a completely scrambled fashion. Thus a "What's this?" question concerning the picture of the couch could be followed by a "What do you do with it?" question about a truck.

The results demonstrated that the children were able to learn these concepts sufficiently well so that they could use them with new examples. However, contrary to the expectations of the experimenter, the amount of

learning was not related to the type of program presented. Again we see that these children will learn when they are provided with interesting and appropriate materials.

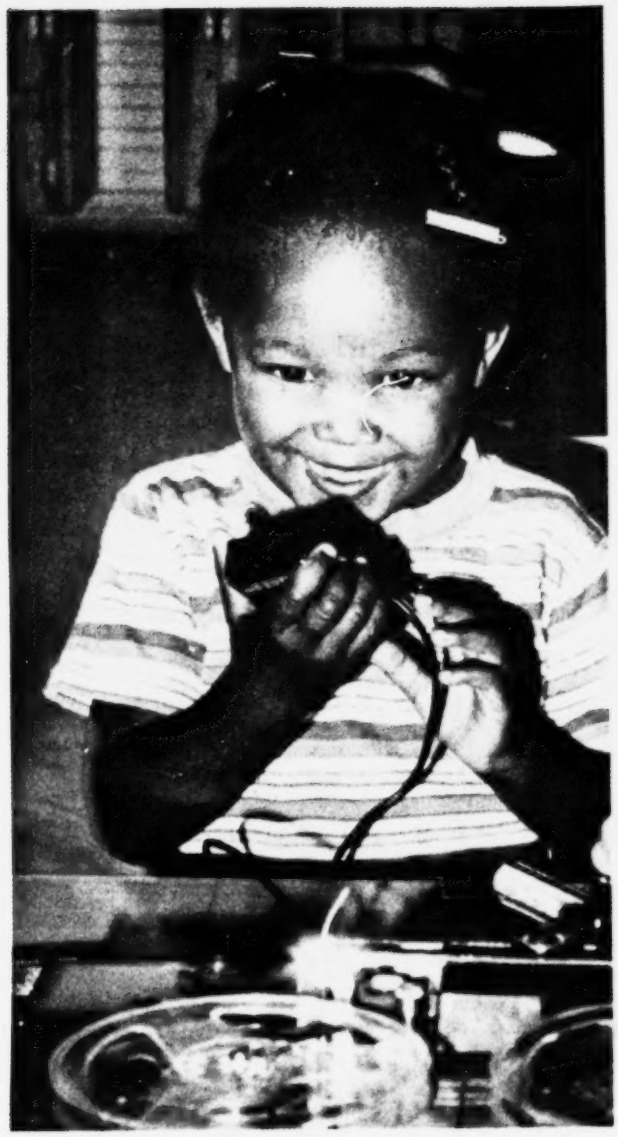
Part III. THE INSTRUCTIONAL PROGRAMS.

In the first two parts of this report we have described the preliminary exploratory and evaluative activities in which we have been engaged during much of this first year. However, the major thrust of the Preschool Language Project is concerned with the preparation of instructional programs and their administration in Day Care Centers. For the past few months we have been concentrating on the preparation of such programs.

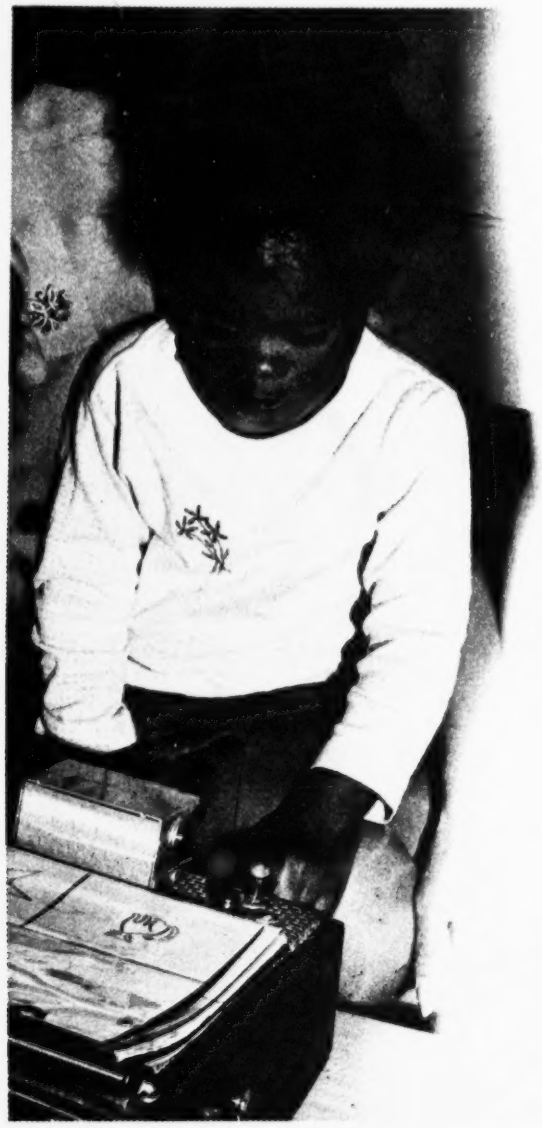
While our primary concern is with language development, for the young child this encompasses the total subject matter content of the curriculum. We have prepared a sequence of programs intended to develop familiarity and facility with language in six areas: Science, Mathematics, Social Studies, Literature, Language Usage, and Logical Processes. The sequence will cover 30 weeks and the tentative time schedule is as follows:

September 19 - September 30.	Pretesting
October 3 - November 11.	6 weeks of instruction
November 14 - November 23.	Mid term evaluation
November 28 - December 16.	3 weeks of instruction
January 2 - February 3.	6 weeks of instruction
February 6 - February 10.	End of first semester: Evaluation
February 13 - March 24.	6 weeks of instruction
April 3 - April 7.	Mid term evaluation
April 10 - June 9.	9 weeks of instruction
June 12 - June 23.	End of first year: Posttests

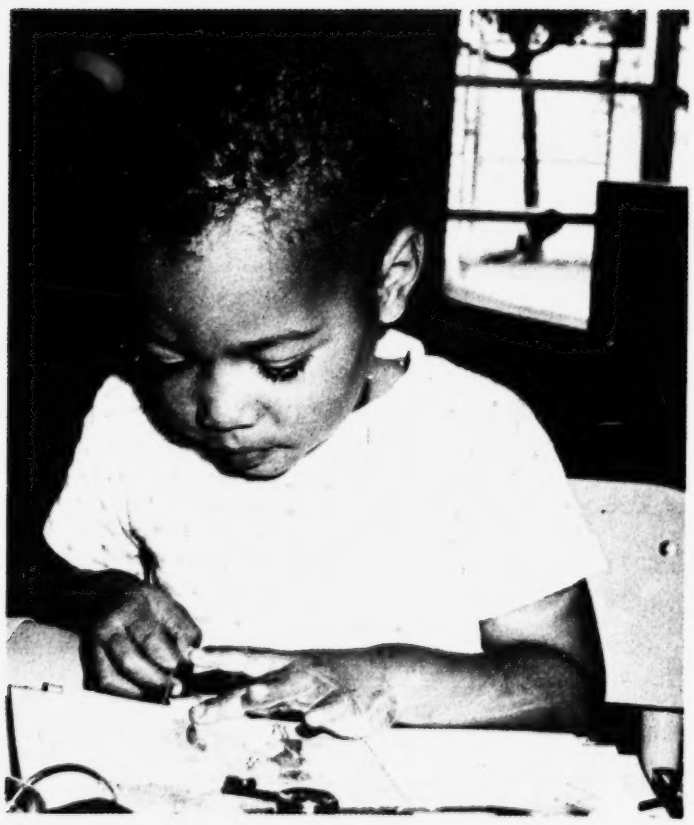
Children listen to stories...



.....tell stories



....or pressing buttons



.....answer questions by pointing

The first two week period will give the person who will be working at a particular Day Care Center the opportunity to become familiar with the children and the staff of the Center. Also, during this period the pretesting will be carried out. To coordinate with the Head Start Evaluation Program, we will probably use the same type of testing program. This will include the Binet and the Caldwell Preschool Inventory, as well as the evaluation instruments mentioned in Part I of this report, for which we will be gathering standardization data.

After this familiarization and pretesting period, the first instructional unit will begin. This will consist of a two-week program on the language of instruction. During this period the children will be taught to respond to instructions such as "look," "point to," "find," etc. They will also be taught to listen to and identify sounds, label pictures, and "read" picture stories.

In the second week of this unit, the children will be introduced to some of the simpler types of materials which they will be using in various phases of the programs. They will be taught to handle booklets and to make selections by marking in specific areas. They will also become familiar with the symbols which represent "Yes" and "No" and will learn to interpret the meaning of the "magic ink" colors which will be used for feedback throughout the instructional programs. At this time they will also learn how to put on and take off their earphones, listen to taped instructions, and record and listen to their own voices telling stories.

When the children have mastered the ability to respond to taped commentary, they will be given a simple echoing program such as the one described in experiment C, using a combination of the echoing and modeling procedure. Thus, on the first day, the child will hear sentences for both of the pictures in a pair; on the second day he will hear sentences for the first picture of the pair and be asked to produce a parallel sentence for the second.

Once the child has learned to make the various types of responses which will be required throughout the instructional programs, he will be able to move into the actual content units. As we have indicated earlier, the daily periods will usually last about 15 minutes. However, even within this short time we are planning to have two or three different types of response activities.

While a great deal of overlapping is unavoidable in any curriculum structure, this is particularly true with young children. It is purely for reasons of convenience that we have divided the materials into six basic categories.

1. Natural Phenomenon (Science). In this category are programs on weather, life and growth, shapes and forms, colors, and animals.

2. People and Places (Social Studies). Here we include family relationships, concepts of the house and its environs, neighborhood services, and occupations.

3. Quantities (Mathematics). The language of quantities to be taught in this section includes the following basic expressions: how much, how many, more than, less than, equal to, same, not the same, bigger, smaller, heavier, lighter, add to, and take away from. In addition, the concept of number as well as the numerals by which they are represented will be introduced. These concepts will be applied in the teaching of money, where naming, identifying, and recognizing the exchange value of various coins will be developed.

4. Problem-solving Skills (Logical Processes). Through the medium of simple three or four picture problem situations, children will be taught to draw logical inferences. This process will give children the opportunity to use their own language as a tool in problem solving. The basic syllogism can be translated into very simple terms such as: All birds have wings; A robin is a bird; A robin has wings. This might be presented to the child by showing the picture of a robin standing with folded wings, along with the commentary: Here is a bird. The next picture would show several birds, not including the robin, with wings outstretched. Commentary: All birds have wings. The final frame in the sequence would show three pictures and the child would be asked to point to or identify in some way the picture of something which has wings.

As part of the same content area, children would be taught the concepts of identity, affirmation, and negation. Here the ability to use "same" and "different" would carry over from the previous unit on quantities. Classification is another important element in problem solving which crosses over content areas. Thus, there would be classific-

ation activities in the learning of colors, sizes, shapes, and numbers, as well as in the learning of such concepts as animals, clothing, furniture, etc.

5. Ordering or seriation is actually another type of problem solving skill which crosses over many subject matter lines, but it is such a basic and important one that we have decided to give it special emphasis. Seriation programs such as counting will use number concepts; the orderly sequence from infancy to adulthood will use natural science concepts; the succession of day and night, and of the seasons also develop the concept of order in nature.

There is also an inherent order in story plots which children will be made aware of through the use of picture cards which present parts of a story, and which the child will be asked to arrange in the proper order. They will begin with simple nursery rhymes which involve three or four pictures, and continue into complex story plots requiring as many as ten or twelve different cards.

6. Language Skills. Although stories will be used as one of the variety of media in which the concept of order will be developed, we will also be using story telling and re-telling to develop facility in verbal expression and the use of language in logical thought. The language unit will also use the pattern-practice techniques to build in the feeling for producing sentences which conform to the school's conception of "good English." However, these standard forms will not be presented as the only correct and acceptable language. Children will not be given the feeling that their own dialect is inferior or inadequate; rather they will be taught that in school there are different ways of saying things.

We would again like to emphasize that these instructional programs will occupy only 15 minutes of the child's total school day. Also, we do not intend to imply that the usual program of the Day Care Center does not provide for very valuable learning experiences in all these areas. The only difference is that auto-instructional programs such as the ones we are preparing afford the opportunity of "high-intensity" learning. Each child is given what amounts to individual instruction, is required to respond to every question, and is given immediate information as to the correctness of his response. No school situation, no matter how expert and dedicated its staff, can provide this type of close pupil-teacher interaction. And the fact that the auto-instructional period is such a short one ensures that the child will have plenty of opportunity for the many other important activities which are part of the Child Care Center's day.

As we have indicated earlier, the programs we have described will be presented through a number of different media or "interfaces." These will range from familiar workbook-type materials (which will be able to provide the child with immediate information as to the correctness of his response through special "magic" inks) to very complex electronic devices which will present the child with visual materials, provide instruction through taped commentaries, and allow the child to obtain information from various types of selection responses. Specially wired tape recorders will enable the child to hear a short story, record his own version of it, and then listen to his own voice tell the story, followed by the original taped version of the story. In addition, a number of other ways of using taped language in games and story-telling are being developed.

The use of manipulanda in programs has always presented problems. We have developed an automatic device which is capable of dispensing a sequence of five puzzles in a predetermined order. Thus we are able to program an instruction lesson which teaches various types of shapes, accompanied by taped commentary which shows children how to use their own language to help them solve the puzzles.

This first year of experimental application of the Preschool Language Program will be a preliminary tryout of the materials. As we receive reactions to the programs, necessary revisions will be made. We will have a separate research group who will continue to visit various Centers and try out the revised programs. At the end of this second year we hope we will have a set of materials which will work with most of the children in the various Day Care Centers. We also hope that these materials will be appropriate for the much larger population which will be attending year-round Head Start Centers. Since we will also be functioning as a Regional Head Start Evaluation and Research Center, there should be a great deal of profitable interaction between our two programs.

At the same time as we will be revising the programs for the preschool year, we will also be engaged in preparing materials for the kindergarten children. In this way we hope to capitalize on the gains made with the preschool program and provide some continuity for the child as he enters the regular school environment.

SUMMARY OF ACTIVITY IN DAY CARE CENTERS AND SCHOOLS
(August 1965 to August 1966)

School or Center	Programs Administered	Total Days	Total Children	Total Child Contacts
Aliso Village	2	2	13	13
Belvedere	1	1	12	12
Bridge St.	1	1	7	7
Canoga Park	1	1	12	12
Dakota St.	1	1	28	28
El Pueblo Del Rio	2	10	32	176
Fifty-Second St.	8	21	139	250
Glenfeliz	1	1	10	10
Lemay	3	6	103	103
Miramonte	7	19	72	230
Ninety-Fifth St.	3	6	40	64
Normandie	4	9	52	104
San Fernando	2	3	16	16
San Pedro	7	22	68	287
Seventy-Fifth St.	4	24	66	360
Sixth St.	2	8	38	128
Thirty-Sixth St.	3	12	74	252
Twenty-Fourth St.	6	9	95	135
Vaughn	2	7	23	78
Vernon City	7	18	61	147
Wadsworth	9	20	70	208
Westchester	1	1	28	28
Westminster	2	2	16	16
Day Care Centers (Total)	79	204	1075	2664
Private Nursery Schools	27	50	387	528
Parent Education Preschools	7	9	74	74
Head Start Centers	44	20	127	390
GRAND TOTAL	157	283	1663	3656